



Mosquito Alert STL: A Collaboration of Public, Academic and Practice Partners to Prevent Vector-Borne Diseases in St. Louis

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Introduction

- Mosquito-borne diseases, including malaria, dengue, zika, chikungunya and West Nile virus cause more than 700,000 deaths each year¹. Missouri communities reported more than 600 cases of West Nile in the last two decades².
- With climate change, the range of life-threatening diseases like malaria and dengue are shifting, potentially to the Midwest, as the range of mosquito species shifts North³.



Mosquito Alert STL (MASTL)

- The MASTL project is a partnership of the St. Louis County and City of St. Louis Health Departments, the Missouri Botanical Garden and the Saint Louis University College for Public Health and Social Justice.
- Mosquito Alert^{4,5} is a smartphone app developed in Barcelona, Spain allowing users to upload photos of mosquitoes, breeding sites, and bites, along with location data, for surveillance purposes.
- Entomologists review reports and relay findings to app users and agencies. In Europe, research has shown that the app effectively supplements local health agencies' mosquito surveillance and control activities⁵.
- Some local health departments in Missouri have active programs for mosquito surveillance and control, while others have more limited resources for these efforts.
- MASTL promotes using the smartphone app for civic and public participation in research, aka citizen science^{4,6}; public support to local health departments for vector control and surveillance; and climate change mitigation and adaptation via conservation and sustainability action.

Objectives

Aim 1: MASTL Outreach

- Since 2021, MASTL has engaged in community-based and digital outreach to promote use of the Mosquito Alert app.
- Preliminary results indicate that education about mosquito biology draws audiences in at speaking events and media outreach. Initial success derives from audience interest in biodiversity and ecology.

Aim 2: MASTL Outreach assessment

- Applying Implementation Science, a survey to assess outcomes noted in logic model to the right is currently undergoing pilot testing.

Aim 3: MASTL Institutionalization

- Key informant interviews with community and agency partners are underway to explore assets and needs for sustained outreach and educational and to identify strategies for management of app data by local health departments. Preliminary results are presented below.

Agency Commitment

- Most local public health agencies in Missouri do not have active (budgeted) vector surveillance programs.
- Southern Missouri is vulnerable to expansion of mosquito *aedes spp.* that are vectors of Zika, dengue and malaria.
- The Missouri Department of Health supports project expansion and exploring opportunities to expand the MASTL project to other local public health agencies in the state.

Next Steps for 2024

- Implement partnership, community and digital outreach activities during the mosquito season
- Collect data for the outreach evaluation in late summer
- Complete data collection and analysis for the institutionalization aim this fall
- Conduct data analysis and manuscript writing in the fall

Community Partner Interview Findings

Strong alignment between organizational and MASTL missions

- Emphasizing service, environmental improvement, and community engagement, with integration strategies focusing on educational programs and partnerships for sustainability
 - *“Improving the environment and strengthening communities”*
 - *“Manage infectious disease, human health, and ecosystem interconnections”*

Multiple strategies to integrate MASTL into programs

- Educational opportunities through conservationists, naturalists, schools, clubs, and nature-based programs
- Seasonal program approach
 - *“Education material for community”*

Collaboration promises multiple benefits to partners

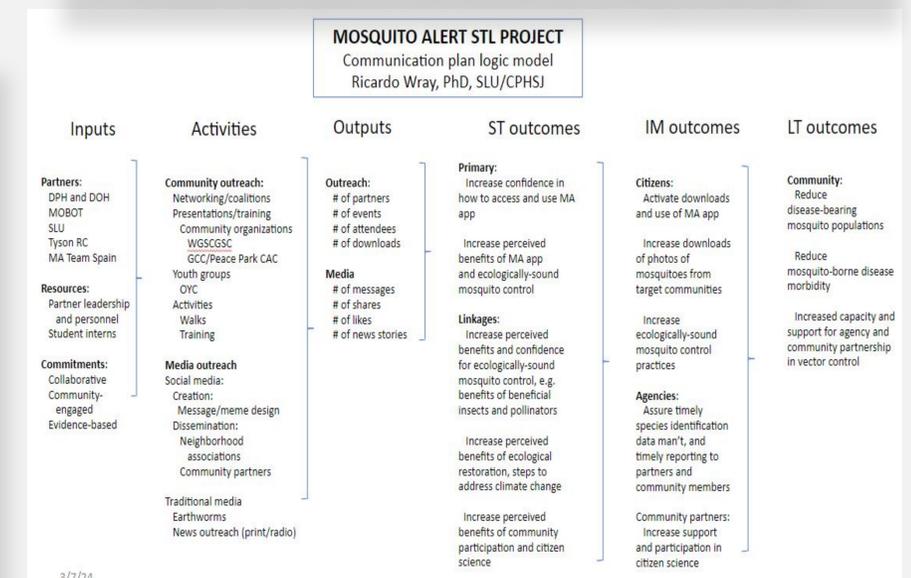
- Citizen science, and contributions to community education

Leadership buy-in is essential to enable partnership

- Emphasis the importance of leadership buy-in and logistical challenges such as limited phone access for members in the field.
 - *Team approval "Not a huge thing" if for project integration into activities, unless official partners on website, then an official procedure and "regional approval" needed*

Multiple strategies for partnership sustainability

- Instituting a participation pledge for sustained programs
- Expanding collaboration with organizations in disadvantaged communities
- Effective annual renewal of engagement through orientation and marketing with *“Fun and interactive activities”*



References

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